DOCUMENT RESUME

ED 365 371 JC 940 035

AUTHOR Boese, Larry; Birdsall, Les
TITLE Instructor Grading Variation and Its Implications for Assessment, Advising, and Academic Standards.
PUB DATE 4 Mar 93
NOTE 14p.; Paper presented at the Annual Research Conference of the Research and Planning Group for California Community Colleges (Lake Tahoe, CA, March 3-5, 1993).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Faculty; Community Colleges; Correlation; Grade Prediction; *Grades (Scholastic); Predictor Variables; Regression (Statistics); *Statistical Data; *Student Characteristics; Two Year Colleges
IDENTIFIERS Diablo Valley College CA

ABSTRACT

The Diablo Valley College (California) Research Office assessed the variation of grades in multiple-section courses and its impact on the ability to predict student success. All classes selected for the study were general education offerings applicable for the Associate of Arts degree and/or transfer, and were taught by more than one instructor. A grade point average (GPA) was computed for each instructor with an A grade equal to 4 points, B=3, C=2, D=1, and F=0 and W (withdrawal)=1. The GPA's were compared for all instructors in each class, and variation was calculated once with W's included and once with W's excluded. Including W's, instructor GPA's varied by a low of 0.6% for an administration of justice course to a high of 18.1% for an anthropology course. Excluding W's, grade variations ranged from 0.2% for a history course to 23% for a physics course. Grading variation for a course did not appear to depend on the number of instructors teaching the course. Other predictor variables examined in the regression analyses of selected courses included student age, gender, ethnicity, educational level, work hours, cumulative GPA in other courses, and high school GPA. The study report includes graphs showing the results of regression analyses for particular courses. (ECC)

1993 ANNUAL RESEARCH CONFERENCE

INSTRUCTOR GRADING VARIATION AND ITS IMPLICATIONS FOR ASSESSMENT, ADVISING, AND ACADEMIC STANDARDS

Larry Boese, Research Coordinator

and

Les Birdsall, Director of Matriculation & Research

Diablo Valley College

March 4, 1993

INSTRUCTOR GRADING VARIATION AND ITS IMPLICATIONS FOR ASSESSMENT, ADVISING, AND ACADEMIC STANDARDS

The Diablo Valley College Research office is evaluating the variation of grades in multi-section courses and how this affects the ability to predict student success. (see the attached Table 1 of 55 courses)

SELECTION PROCESS

Must be a multi-section course.

Must have more than one instructor teaching the course.

Must be GE applicable for the AA degree and/or transfer.

ANALYSIS

An Instructor's GPA was calculated by using the students grades for that instructor with A=4, B=3, C=2, D=1, and F=0 (W=0 when it was used).

The GPA's were compared across instructors for each course and the R^2 was calculated, first with the W's included (Grade 1 by Instructor) and then with the W's excluded (Grade 2 by Instructor).

The table also shows the minimum GPA, the maximum GPA, and the range between the minimum and maximum.

The * indicates the R^2 was significant at the 0.05 level or better.

FINDINGS

The R^2 for grades including W's varied from 0.6% to 18.1%.

The R^2 for grades excluding W's varied from 0.2% to 23%.

The size of the R^2 does not appear to be dependent on the number of instructors. For example, Anthr 130 has the largest R^2 with only four instructors and Engl 123 with 21 instructors has an R^2 of 13.1% but Spch 120 also with 21 instructors has an R^2 of 4.1%.

QUESTIONS

What are some of the reasons for the variation in grades?

What should be a reasonable goal for the value of R^2?

What should be a reasonable goal for the range value?

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Table 1: Instructor Variation in Grading in 55 DVC Courses
(Listed Alphabetically by Course Title)

			Grade1 by Instructor					Grade2 by Instructor				
Course	Stdt. N	Instr. N	R Sq.		Min GPA	Max GPA	Range	R Sq.		Min GPA	Max GPA	Range
Anthr. 130	284	4	18.1%	*	1.69	3.56	1.87	11.8%	*	2.56	3.56	1.00
Ad.Jus. 120	421	5	0.6%		1.88	2.32	0.44	4.4%	*	2.26	3.15	0.89
Astro. 110	415	2	7.9%	*	1.65	2.45	0.80	8.6%	*	2.11	2.80	0.69
Bio.Sc. 101	268	3	9.2%	*	1.10	2.36	1.26	4.8%	*	2.00	2.73	0.73
Bio.Sc. 102	680	13	10.6%	*	0.91	2.83	1.92	11.7%	*	1.62	3.26	1.64
Bus. 109	459	6	7.6%	*	1.53	2.73	1.20	14.6%	*	2.15	3.47	1.32
Bus. 186	718	8	5.5%	*	1.19	2.36	1.17	4.5%	*	2.19	3.00	0.81
Chem. 108	416	11	5.7%	*	1.19	2.46	1.27	8.5%	*	2.07	3.27	1.20
Chem. 120	254	6	5.4%		1.32	2.56	1.24	13.0%	*	2.26	3.45	1.19
Com.Sc. 10	643	7	3.9%	*	1.53	2.46	0.93	10.1%	*	1.90	3.15	1.25
Econ. 220	711	7	4.6%	*	1.27	2.09	0.82	2.8%		2.11	2.85	0.74
Econ. 221	271	4	3.7%		1.82	2.43	0.61	3.5%		2.34	2.83	0.49
Engl. 96	152	7	14.5%	*	1.09	2.62	1.53	22.2%	*	1.59	3.23	1.64
Engl. 98	155	7	2.7%		1.73	2.56	0.83	6.6%		2.50	3.71	1.21
Engl. 116	336	10	1.9%		1.79	2.59	0.80	5.6%		2.05	3.41	1.36
Engl. 118	774	23	10.1%	*	1.45	3.76	2.31	13.2%	*	1.71	3.76	2.05
Engl. 122	2148	47	13.9%	*	1.00	3.56	2.56	16.2%	*	1.56	3.63	2.07
Engl. 123	742	21	13.1%	*	1.15	3.78	2.63	14.4%	*	2.00	3.85	1.85
Engl. 126	640	13	12.5%	*	1.00	3.08	2.08	16.6%	*	1.88	3.46	1.58
Fam.Li. 124	519	5	8.2%	*	1.87	3.05	1.18	15.8%	*	2.13	3.47	1.34
Geog. 120	366	2	0.7%		2.24	2.48	0.24	1.7%		2.54	2.85	0.31
Geol. 120	390	4	13.6%	*	1.30	2.55	1.25	9.5%	*	1.86	2.84	0.98
H. Sci. 124	1071	10	17.2%	*	1.23	3.59	2.36	22.3%	*	1.55	3.75	2.20
Hist. 120	1076	10	11.1%	*	1.04	2.54	1.50	12.9%	*	1.63	2.90	1.27
Hist. 121	458	8	9.7%	*	0.93	2.70	1.77	6.5%	*	1.58	2.92	1.34
Hist. 122	173	2	1.8%		2.05	2.38	0.33	0.2%		2.43	2.53	0.10
Hist. 124	249	3	6.8%	*	1.65	2.60	0.95	8.9%	*	1.95	2.98	1.03
Human. 105	481	6	8.1%	*	1.69	3.50	1.81	9.9%	*	2.24	3.77	1.53
Math 71	598	10	5.2%	*	1.01	2.35	1.34	13.5%	*	1.31	3.12	1.81
Math 110	952	18	5.7%	*	1.19	2.56	1.37	14.4%	*	1.55	3.35	1.80
Math 120	1018	21	6.0%	*	1.03	2.63	1.60	6.9%	*	1.60	3.03	1.43
Math 121	403	8	8.7%	*	0.77	2.53	1.76	15.3%	*	1.67	3.30	1.63
Math 124	314	7	3.6%		1.36	2.07	0.71	8.6%	*	1.82	2.90	1.08
Math 135	174	4	4.4%		1.35	2.32	0.97	3.1%		2.08	2.72	0.64
Math 142	524	11	7.5%	*	1.43	2.95	1.52	8.4%	*	2.39	3.41	1.02
Math 181	175	5	4.0%		1.39	2.19	0.80	6.2%		2.03	2.91	0.88
Math 191	216	5	4.5%		1.09	2.03	0.94	3.2%		2.14	2.68	0.54
Math 192	432	12	4.8%		1.59	2.77	1.18	4.9%		2.35	3.25	0.90
Math 193	217	6	7.7%	*	1.43	2.73	1.30	7.3%		2.75	3.39	0.64
Music 110	309	4	1.4%		2.36	3.15	0.79	1.3%		2.57	3.15	0.58
P.E. 121	481	7	4.6%	*	2.20	3.14	0.94	10.7%	*	2.59	3.67	1.08
P.E. 124	992	12	6.2%	*	2.00	3.59	1.59	12.9%	*	2.49	3.88	1.39
P.E. 126	670	8	5.1%	*	1.50	3.00	1.50	6.6%	*	3.11	3.82	0.71
Phy.Sc. 112	165	2	10.3%	*	1.69	2.55	0.86	15.2%	*	2.25	2.97	0.72
Phys. 110	209	4	9.2%	*	1.53	2.78	1.25	16.9%	*	1.91	3.36	1.45
Phys. 120	124	5	11.5%	*	1.47	3.00	1.53	12.9%		2.59	3.69	1.10
Phys. 130	116	4	6.2%		1.48	2.54	1.06	23.0%	*	2.29	3.59	1.30
Pol.Sc. 120	348	5	5.4%	*	1.05	2.16	1.11	8.4%	*	1.73	2.78	1.05
Pol.Sc. 121	281	4	1.0%		1.52	1.95	0.43	3.4%		1.89	2.56	0.67
Psych. 122	1523	15	4.8%	*	2.04	3.21	1.17	5.1%	*	2.64	3.43	0.79
Psych. 210	882	9	7.2%	*	1.90	3.29	1.39	8.7%	*	2.30	3.55	1.25
Psych. 220	206	2	1.5%		2.36	2.76	0.40	3.3%		2.94	3.33	0.39
Soc.Sc. 110	302	5	12.6%	*	1.58	3.33	1.75	12.9%	*	2.18	3.53	1.35
Socio. 120	366	3	5.2%	*	1.95	2.72	0.77	4.5%	*	2.33	2.96	0.63
Spch. 120	1345	21	4.1%	*	1.57	3.17	1.60	6.2%	*	2.35	3.62	1.27

VARIABLES EXAMINED IN THE REGRESSION ANALYSES OF SELECTED COURSES

PREDICTOR VARIABLES

ENTERING STUDENTS[1]	CONTINUING STUDENTS
Age (log function)	Age (log function)
Gender	Gender
Ethnicity (White/Nonwhite)	Ethnicity (White/Nonwhite)
Educational Level[2,3]	Educational Level[2,3]
Work Hours[3]	Work Hours[3]
Cumulative GPA in Other Courses[4]	Cumulative GPA in Other Courses[4]
High School GPA (self reported)	
Total Score on the APS English Test	
Instructor GPA (excluding W's)	Instructor GPA (excluding W's)

OUTCOME VARIABLE

Grades (excluding W's)	Grades (excluding W's)

1. Entering students include first time freshmen or transfer and returning students with less than 12 units.

2. On a scale of 1-8, where 1 = first time freshman and 8 = PHD Degree.

3. At the time of application to the college.

4. This excludes students who enrolled in no other courses that contributed to their DVC GPA.

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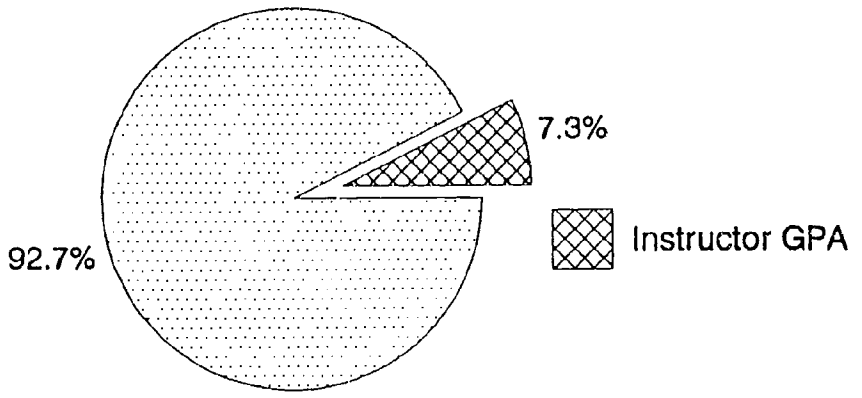
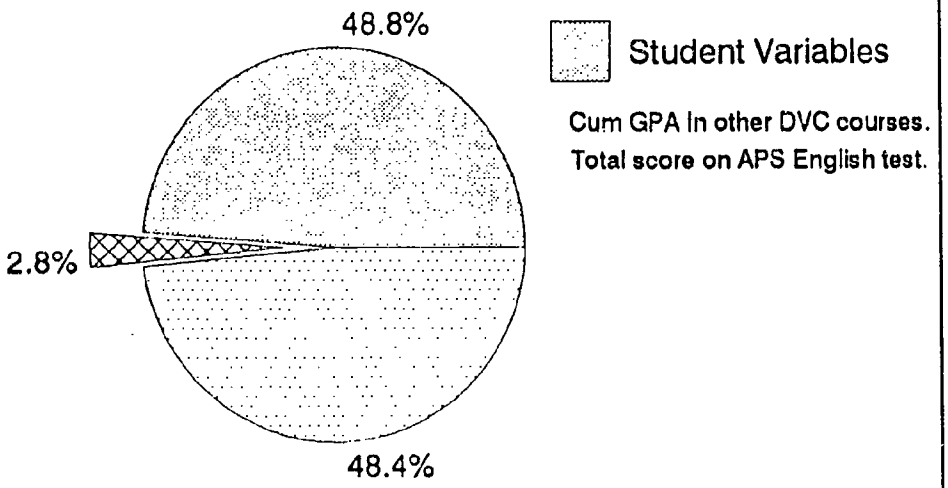
REGRESSION ANALYSIS FOR BIOSC 102

Entering Students



Instructor GPA Only



Student & Instructor Variables

Source: Fall 92 Data
3/2/93
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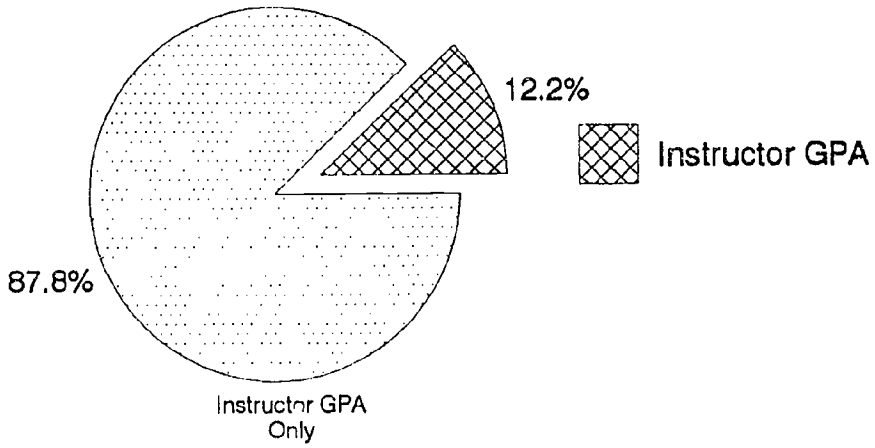
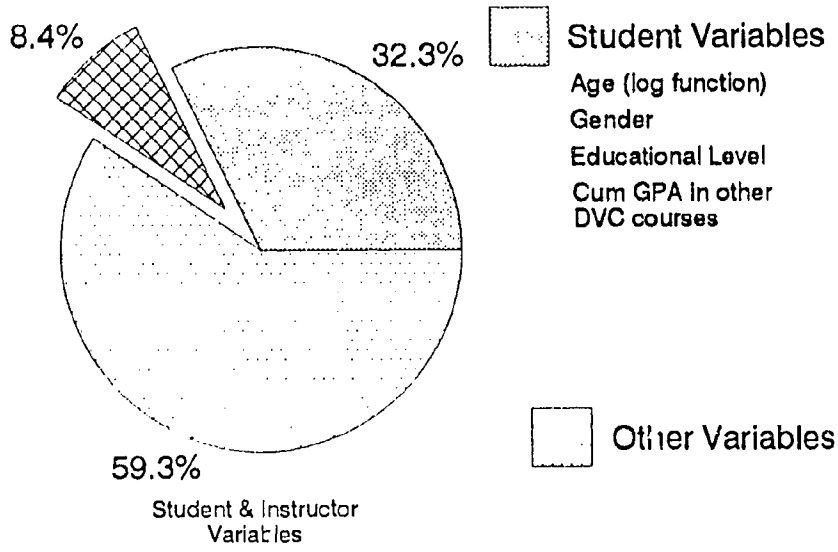
(Excludes W grades)

REGRESSION ANALYSIS FOR BIOSC 102

Continuing Students





Source: Fall 92 Data
3/2/93
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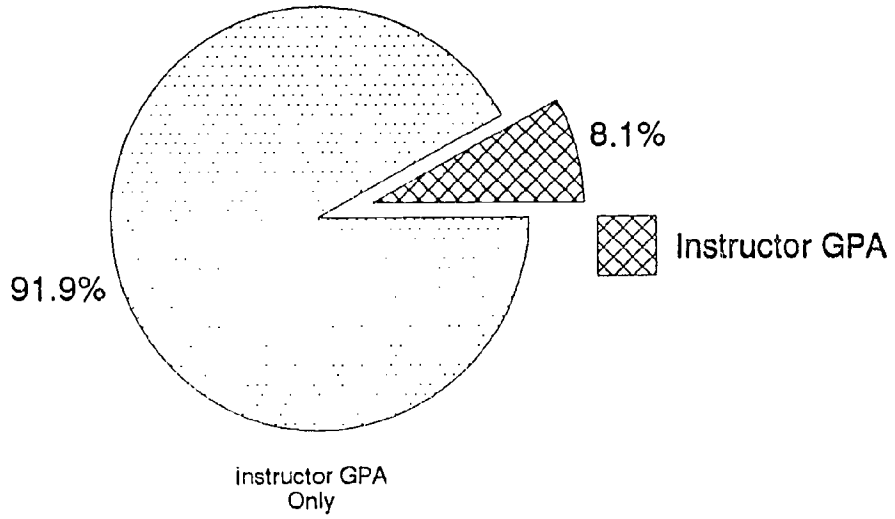
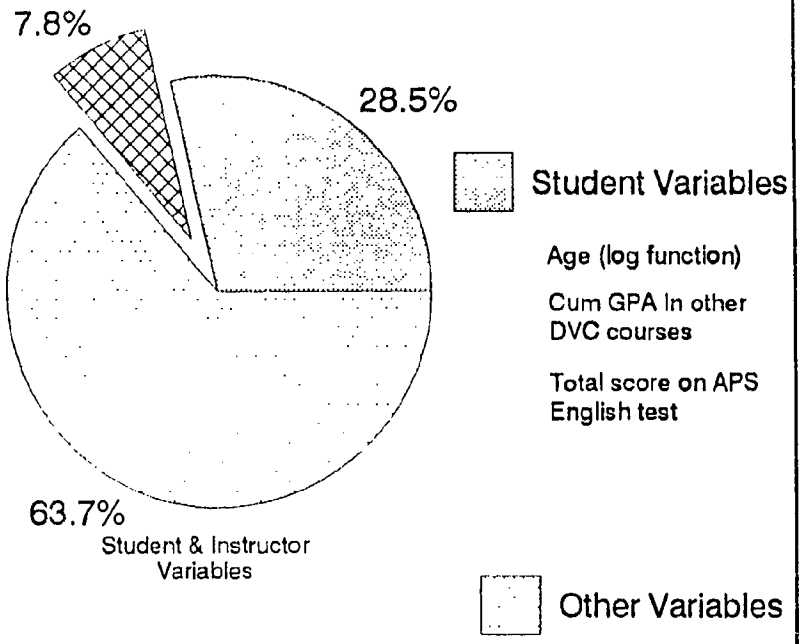
(Excludes W grades)

REGRESSION ANALYSIS FOR BUS 109

Entering Students



Instructor GPA Only



Source: Fall 92 Data
3/2/93
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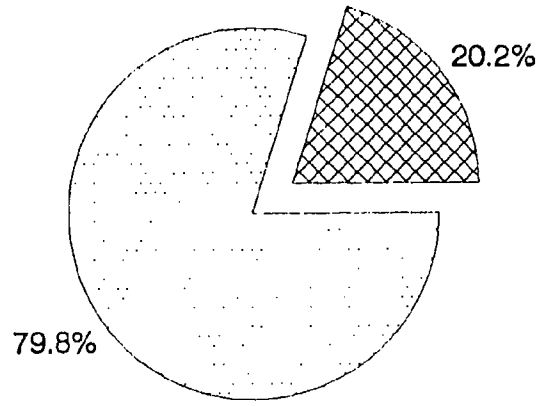
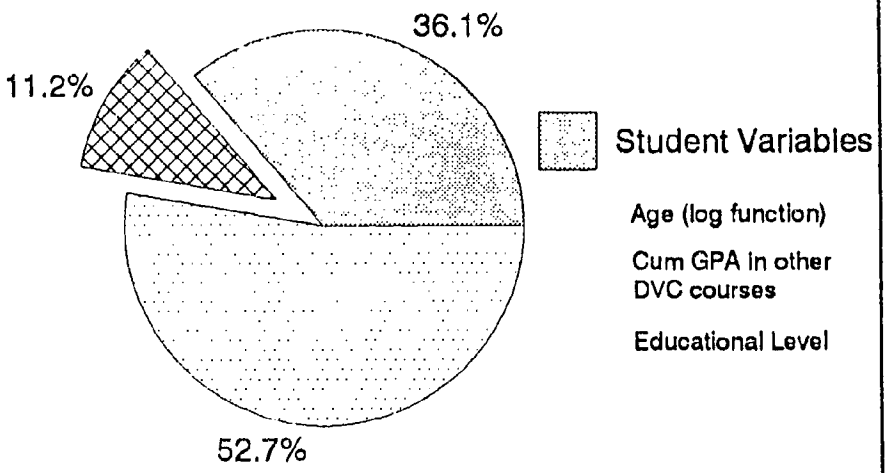
(Excludes W grades)

REGRESSION ANALYSIS FOR BUS 109

Continuing Students



Instructor GPA Only



Student & Instructor Variables

Source: Fall 92 Data
3/2/93
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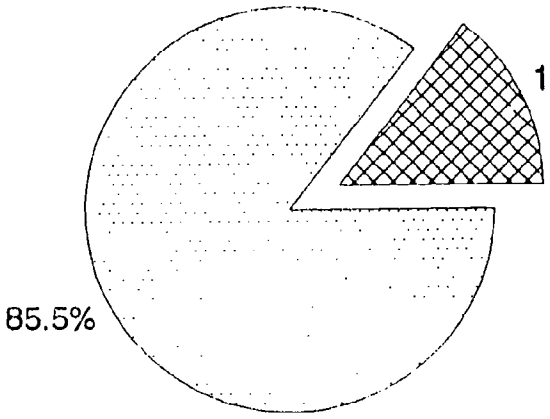
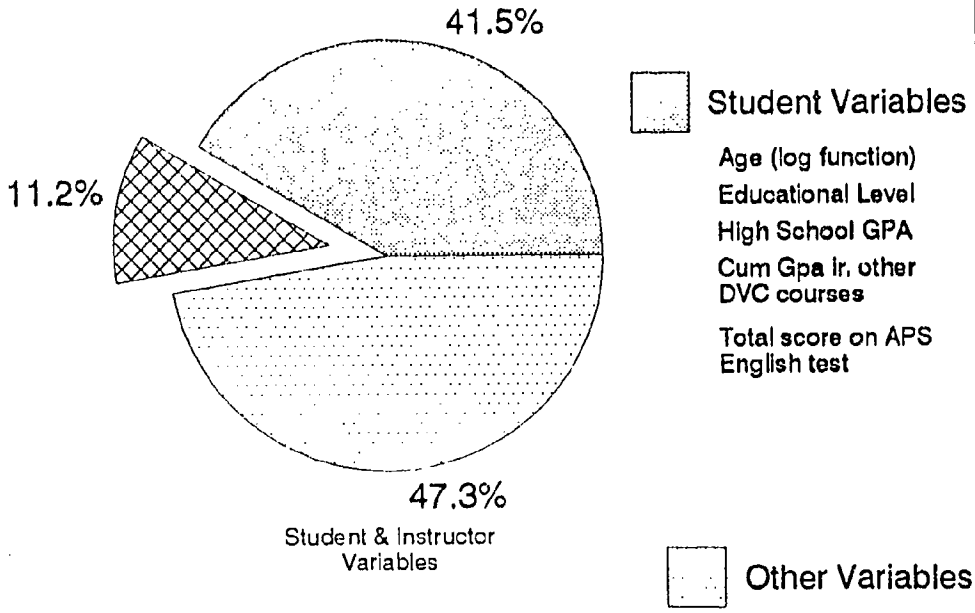
(Excludes W grades)

REGRESSION ANALYSIS FOR HISTORY 120

Entering Students



Instructor GPA Only



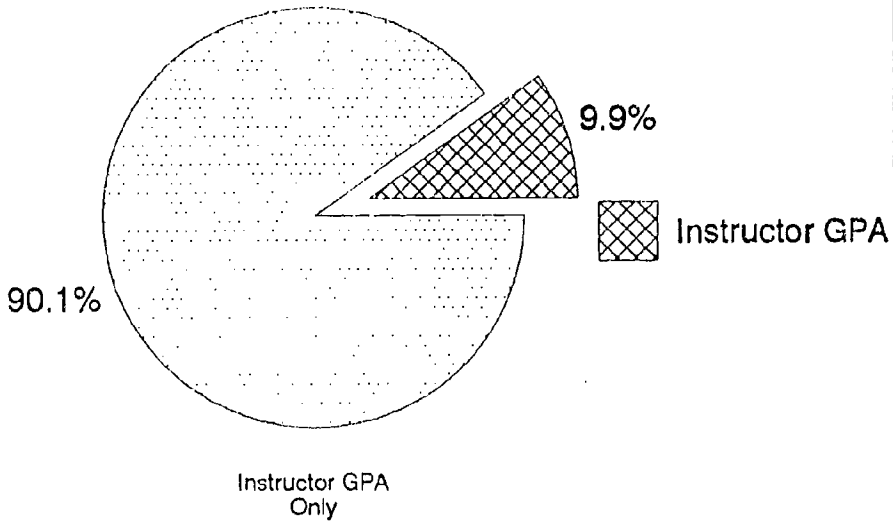
Student & Instructor Variables

Source: Fall 92 Data
3/2/93
A:\acct\reg_his.E

(Excludes W grades)

REGRESSION ANALYSIS FOR HISTORY 120

Continuing Students



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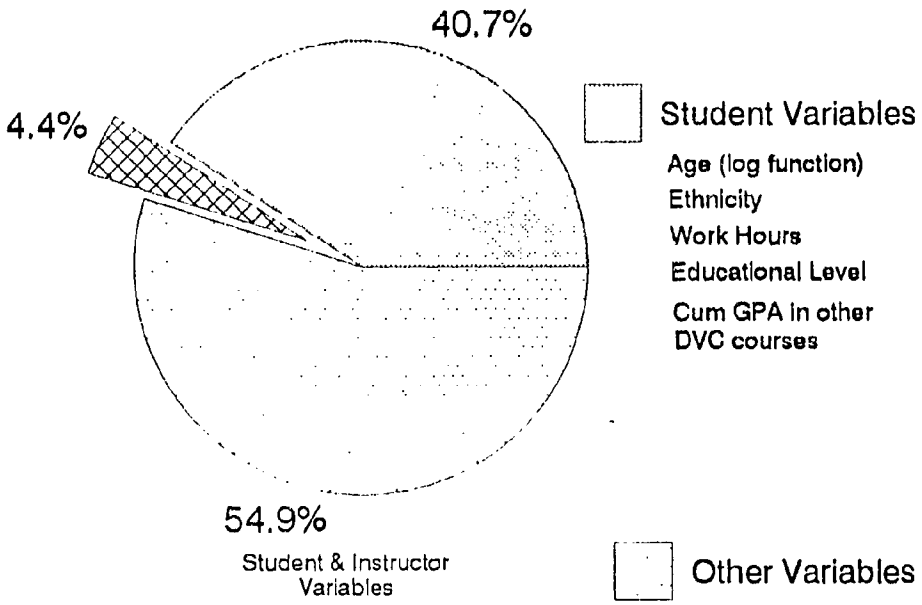

Source: Fall 92 Data
3/2/93
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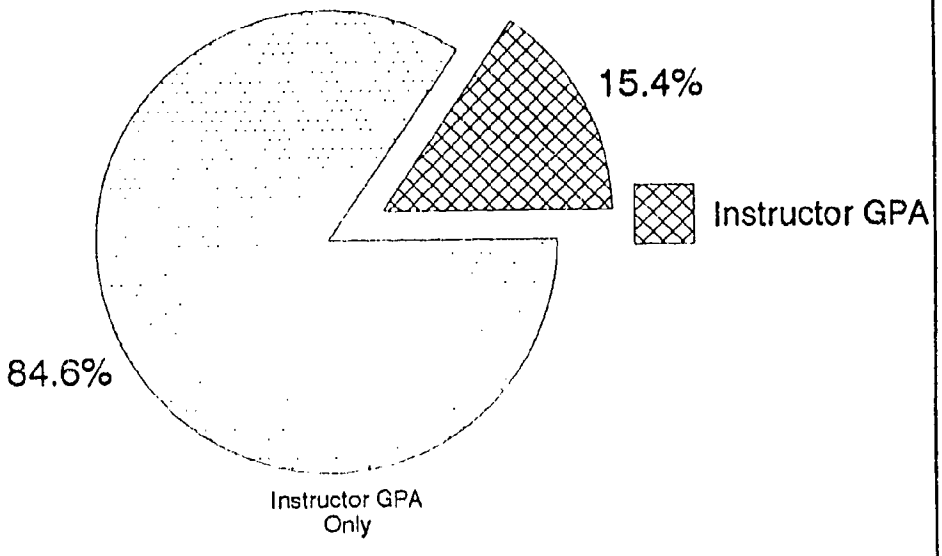
(Excludes W grades)

REGRESSION ANALYSIS FOR ENGLISH 122

Entering Students



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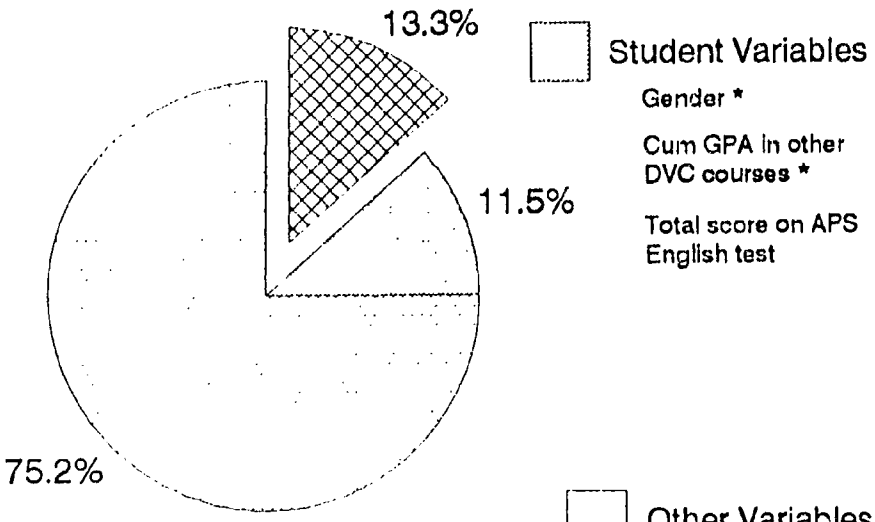


Student & Instructor Variables

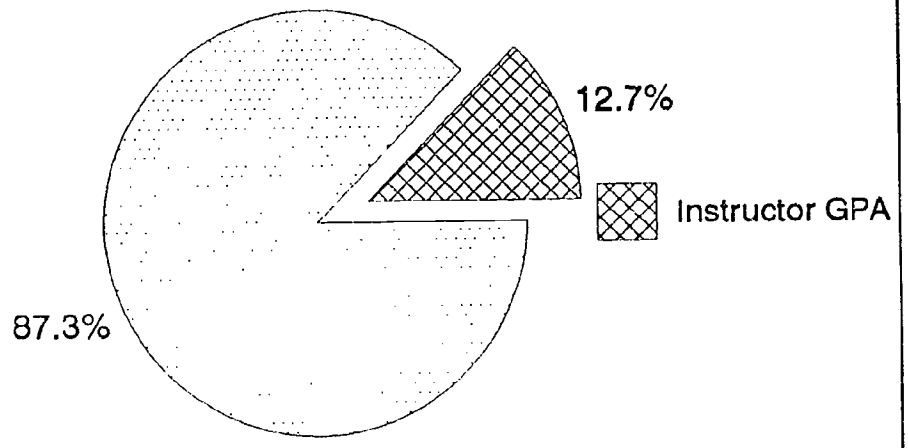
* These variables are negatively correlated with final grade.

Source: Fall 92 Data
3/2/93
A:\acct\reg_engE

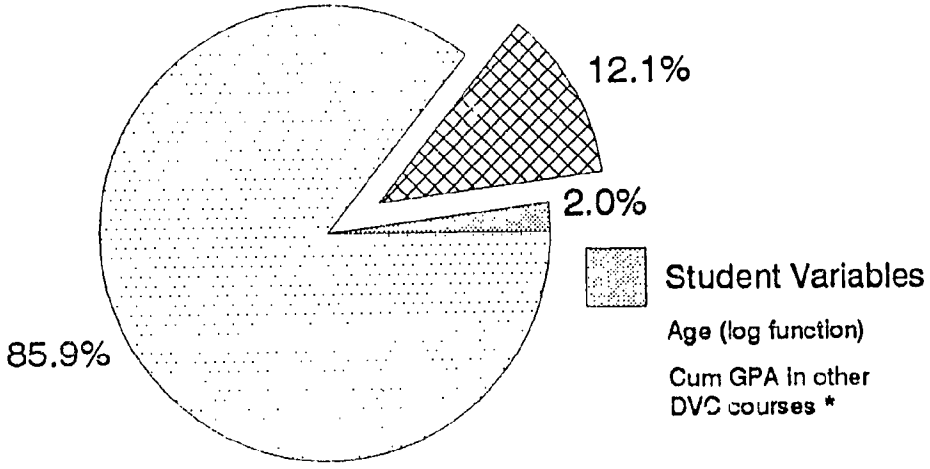
(Excludes W grades)

REGRESSION ANALYSIS FOR ENGLISH 122

Continuing Students



Instructor GPA Only



Student & Instructor Variables

Other Variables

* This variable is negatively correlated with final grade.

Source: Fall 92 Data
3/2/93
A:\acct\reg_engC

(Excludes W grades)

CORRELATIONS BETWEEN TEST SCORES
AND FINAL GRADES (excluding W's)
IN ENGLISH 122, FALL 1992
CONTROLLING FOR INSTRUCTOR GRADING VARIATION

	(N = 709)			(N = 76)
Statistic	APSCC Test Scores			Writing
	Total	Reading	Writing	Sample
r (xy)	.263 **	.183 **	.299 **	.180
r (xz)	-.004	-.028	.028	-.038
r (yz)	.361	.361	.361	.389
r (xy.z)	.284	.207	.310	.211
SD	11.20	6.73	5.65	1.77
sd	9.61	5.84	4.89	1.76
R (xy.z)	.326	.237	.352	.213

Notes:

Final grades were coded so that A=4, B=3, C=2, D=1 and F=0.

r (xy) = the correlation between test score (x) and final grade (y) in the sample.

** r (xy) is significant at the $p<.05$ level; * r is significant at the $p<.10$ level.

r (xz) = the correlation between test score (x) and instructor GPA (z).

r (yz) = the correlation between final grade (y) and instructor GPA (z).

r (xy.z) = correlation between test score and final grade, controlling for instructor GPA.

SD = the standard deviation of the unrestricted range of test scores.

sd = the standard deviation of the restricted range of test scores in the sample.

R (xy.z) = the correlation between test score and final grade, corrected for restriction of range in test scores and for instructor grading variation.

Shaded R's meet the .35 predictive validity standard for assessment instruments set by the California Community Colleges Chancellor's Office.

N = sample size on which the statistical results are based.